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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/10506	International filing date (day/month/year) 19.09.2003	Priority date (day/month/year) 27.09.2002	
International Patent Classification (IPC) or both national classification and IPC A61K7/50			
Applicant UNILEVER PLC			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 26.04.2004		Date of completion of this report 14.01.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Drew, C Telephone No. +49 89 2399-8494 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/10506**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-24 as originally filed

Claims, Numbers

1-10 filed with telefax on 12.11.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/10506

- 1 The following documents (D) have already been considered in the written opinion of 12.07.2004:

D1 EP-A-0 758 674 (TOYO SEIKAN KAISHA LTD) 19 February 1997 (1997-02-19)

D2 US-A-4 761 273 (GROLIER JEAN F ET AL) 2 August 1988 (1988-08-02)

Section I

- 2 The applicants have combined originally filed claims 1 and 10 and renumbered claim 11.

Section V

- 3 *Novelty (Article 33(2) PCT)*

None of the available prior art documents would appear to describe a packaged mousse-forming personal care composition including all features of claim 1. This claim, along with dependent product claims 2 to 9 and claim 10 to the preparation of the previously claimed products, would therefore appear to be novel.

- 4 *Inventive Step (Article 33(3) PCT)*

- 4.1 Present claim 1 relates to an aluminium aerosol container with an inner surface coating of cured polyamide imide resin, containing an aqueous mousse-forming personal care composition including propellant and characterized by a chloride ion content of 0.16 wt% or less and a pH from 5 to 8. Comparative data in the application demonstrate the importance of these parameters for preventing blister or pin hole formation in polyamide imide resin coatings. They further show that, with a thermosetting polyvinyl organosol, Microflex™, coating even a composition according to claim 1 leads to the formation of pin holes.
- 4.2 D1 describes an aluminium aerosol container with an inner surface coating of cured polyamide imide resin, whereby the concentration ratio of the amide to imide groups

is controlled to provide the coating with resistance to the container content, particularly the property of not absorbing dyes and pigments. The aerosol containers can be used for hair dyes.

- 4.3 D2 relates to aqueous hair setting compositions based on cationic and anionic polymers, such that at least one of these polymers forms a foam in aqueous solution, which foam is unstable on contact with the hair. The compositions can exhibit a pH of 5 to 9. Exemplified compositions comprise 2.5 and 3 wt% sodium chloride and are packaged in aluminium containers.
- 4.4 The remaining documents from the international search report would seem to be less relevant than D1 and D2.
- 4.5 D1 would appear to represent the closest state of the art, because it already recognises the need to provide aluminium aerosol containers with an inner surface coating of cured polyamide imide resin to permit storage of the contents under extreme conditions without corrosion of the container,
- 4.6 D1, at page 2, lines 21 to 41, contains the following passages:

"However, a metal aerosol container has a problem with regard to resistance against the content and resistance against the corrosion. Problems arises such as underlayer corrosion of coating, blister, etc. particularly when the container contains injection agent and solvent having large permeating property such as dimethyl ether or the like or contains strongly corrosive components.

An epoxy-phenol resin coating material has heretofore been used as the inner surface coating for the aerosol containers, which, however, still lacks resistance against the content and resistance against the corrosion when strongly permeating and strongly corrosive liquids are contained, and it has been urged to provide a coating material that substitutes for the above coating material.

Japanese Laid-Open Patent Publication No. 67374/1990 discloses an aerosol container obtained by coating the inner surface of a metal container for forming an aerosol can with a polyamideimide resin coating material.

It has been said that the polyamideimide resin withstands against a strongly corrosive liquid such as a cationic surfactant-dimethyl ether-ethanol-water which is a strongly corrosive mixture for a week at 60°C. In many cases, however, the polyamideimide resin develops blisters during the subsequent two to three weeks, and is not still satisfactory with respect to resistance against the content.

In recent years, it has been demanded to fill the inner surface-coated metal container and, particularly, the aerosol container with a content that has a property to strikingly deteriorate the inner surface coating or the metal, such as a hair dye. Hair dye is used to dye the hair within very short periods of time, and permeates into the inner coating to a conspicuous degree and, besides, dyes the inner coating itself. Moreover, with the dye being adsorbed by the coating, the content loses the balance of color making it difficult to dye the hair in a desired color. Furthermore, hydrogen evolves as the content comes into contact with the metal underlayer, and the dye is reduced with hydrogen causing the content to be discolored."

And further, at page 2, lines 49 to 54:

"The present inventors have discovered the fact that the resistance of the cured polyamideimide coating against the content and, particularly, the property for not adsorbing pigments, is greatly affected by a concentration ratio of the amide groups to the imide groups in the coating material.

The object of the present invention therefore is to provide an inner surface-coated metal container and, particularly, an aerosol container that exhibits intimate adhesiveness to a metallic base material of the container, inertness to the content and excellent resistance against the corrosion."

- 4.7 All of these problems are addressed by an inner surface coating of cured polyamide imide resin, whereby the concentration ratio of the amide to imide groups is controlled. This can also be deduced from the comparative data presented under the headings "Resistance to the content: hair dye/hair liquid/hair tonic/sauce/surfactant" in Tables 1 to 3 on pages 13 to 16 in connection with the evaluation key appearing at page 9, lines 6 to 12.

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- 4.8 It is therefore abundantly clear that the teaching of D1 goes beyond the property of cured polyamide imide resins not to absorb dyes and pigments. The skilled worker is also taught that these resins exhibit improved inertness to the content of aerosol containers and that metallic, particularly aluminium, aerosol containers provided with inner coatings of these resins exhibit improved resistance to corrosion.
- 4.9 The comparative data in the present application does not support the attainment of any unexpected effect as evidence of an inventive step. Thus, chloride ion is a known corrosive substance for aluminium aerosol containers. Reducing its content to 0.16 wt% or less would therefore have been expected to reduce the corrosive nature of the content. The same is true for the, relatively neutral, pH range of 5 to 8, as lower, acidic, and higher, alkaline, values would have been expected to lead to more corrosion. Moreover, it is by no means uncommon to formulate personal care compositions with low levels of chloride ion and at neutral pH values. Finally, there can be no inventive merit in providing the personal care composition as a mousse-forming product.

Other Matters

- 5 The definition of the invention bridging pages 3 and 4 is not in agreement with amended claim 1, Article 6 PCT.

CLAIMS

1. A mousse-forming personal care composition packaged in an aluminium container, wherein the composition comprises:

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(a) from 80 to 98% by weight of an aqueous base comprising at least 30 %, preferably at least 40 %, most preferably at least 50 % by weight of water and;

10 (b) from 2 to 20% by weight of a propellant,

wherein the aqueous base (a) comprises 0.16 % or less by weight of chloride ions and wherein the pH of the aqueous base (a) is from 5.0 to 8.0, and wherein the aluminium
15 container has an inner surface coating of a cured thermosetting resin.

2. A packaged composition as claimed in claim 1, wherein the aqueous base (a) is a shampoo base comprising a
20 cleansing surfactant.

3. A packaged composition as claimed in claim 2, wherein the cleansing surfactant is present in an amount of from 5 to 40 wt % by weight of the total composition.

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4. A packaged composition as claimed in claim 2, wherein the weight ratio of cleansing surfactant to sodium chloride is 30:1 or more, preferably 300:1 or more and more preferably 600:1 or more.

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5. A packaged composition as claimed in any preceding claim, which further comprises a pH adjusting agent.

6. A packaged composition as claimed in claim 5, wherein
5 the pH adjusting agent is citric acid.

7. A packaged composition as claimed in claim 5, wherein the pH adjusting agent is arginine.

10 8. A packaged composition as claimed in any preceding claim, wherein the aqueous base (a) has a viscosity of 500 mPas or less at 21 s^{-1} and 25°C .

9. A packaged composition as claimed in any preceding
15 claim, wherein the propellant is selected from n-butane, iso-butane, propane and mixtures thereof.

10. A packaged composition as claimed in any preceding claim, wherein the thermosetting resin is a cured
20 polyamideimide resin.

11. A process for the preparation of a packaged composition as defined in any preceding claim, comprising the steps of:

- (i) charging the aluminium container with the aqueous
25 base,
(ii) sealing the container, and
(iii) adding the propellant through a valve.